

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 07-090413

(43)Date of publication of application : 04.04.1995

(51)Int.Cl.

C22C 1/04  
H01L 23/14

(21)Application number : 05-259144

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(22)Date of filing : 22.09.1993

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## (54) COMPOSITE MATERIAL

## (57)Abstract:

PURPOSE: To obtain a functional material having a small thermal expansion coefft. so as to obtain reliability of joining with a semiconductor element and also having thermal conductivity capable of obtaining sufficient heat radiating property.

CONSTITUTION: Quartz particles of  $\leq 500\mu\text{m}$  average particle size are uniformly dispersed in a metal material having high thermal expansion such as Cu, Cu-alloy, Al, Al-alloy to decrease the thermal expansion coefft. By properly selecting the volume proportion of quartz particles in the metal material from the range of 40 to 70%, a desirable thermal expansion coefft. can be obtd. while sufficient thermal radiating property is maintained. Thus, both of low thermal expansion and high thermal conductivity can be obtd. The material can easily be produced into a desired form by powder metallurgical processing, and composite material having proper characteristics and a shape according to the purpose can easily be obtd.

## LEGAL STATUS

[Date of request for examination] 04.07.2000

[Date of sending the examiner's decision of rejection] 23.07.2003

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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